

WHAT IS CLAIMED IS:

1. A semi-submersible offshore vessel (1) exhibiting a first end (2) and a second end (4), said vessel (1) comprising:

a substantially rectangular ring-pontoon (6) including a first transverse pontoon section (10) located at the first end (2) of the vessel (1); a second transverse pontoon section (12) located at the second end (4) of the vessel (1), said second transverse pontoon section (12) being parallel to the first transverse pontoon section (10), the ring-pontoon (6) further including two mutually parallel longitudinal pontoon sections (14) extending between said first (2) and second end (4) of the vessel (1);

at least four support columns (16, 18, 20, 22) extending upwardly from respective edge-portions (23) of said ring-pontoon (2), said support columns (16, 18, 20, 22) being arranged in a first column pair (24) located at the first end (2) of the vessel (1) and a second column pair (26) located at the second end (4) of the vessel (1); and

an upper deck structure (28) positioned upon said support columns (16, 18, 20, 22), wherein the first transverse pontoon section (10) has a vertical mean cross-section area (A) which exceeds the corresponding vertical mean cross-section area (B) of the second transverse pontoon section (12), and the support columns (20, 22) in the second column pair (26) each has a water-plane area (E) which exceeds the water-plane area (D) of each of the support columns (16, 18) in the first column pair (24).

2. A semi-submersible offshore vessel (1) according to claim 1, wherein the square root of the water-plane area (D) of the support columns (16, 18) in the first column pair (24) is less than the longitudinal mean width (W_1) of the first transverse pontoon section (1).

3. A semi-submersible offshore vessel (1) according to claim 1, wherein the square root of the water-plane area (E) of the support columns (20, 22) in the second

column pair (26) exceeds the longitudinal mean width (W_2) of the second transverse pontoon section (12).

4. A semi-submersible offshore vessel (1) according to claim 1, wherein the second transverse pontoon section (12) has:

an outer side (54) which at least at pontoon top level (55) is aligned with transverse outer sides (56) of the support columns (20, 22) in the second column pair (26), and

an inner side (58) which at least at pontoon top level (55) is aligned with a transversal internal bulkhead (60) within said support columns (16, 18) in the second column pair (26).

5. A semi-submersible offshore vessel (1) according to claim 1, wherein the support columns (16, 18) in the first column pair (24) each have:

a transverse outer side (62) which at least at pontoon top level (63) is aligned with an outer side (64) of the first transverse pontoon section (10), and

a transverse inner side (66) which at least at pontoon top level (63) is aligned with a transverse internal bulkhead (67) within said first transverse pontoon section (10).

6. A semi-submersible offshore vessel (1) according to claim 1, wherein the support columns (16, 18) in the first column pair (24) each have:

a transverse outer side (62) which at least at pontoon top level (63) is aligned with a transverse internal bulkhead (67) within said first transverse pontoon section (10), and

a transverse inner side (66) which at least at pontoon top level (63) is aligned with an inner side (65) of the first transverse pontoon section (10).

7. A semi-submersible offshore vessel (1) according to claim 1, wherein the first transverse pontoon section (10) has a vertical mean cross-section area (A) which

exceeds the corresponding vertical mean cross-section area (B) of the second transverse pontoon section (12) by a factor of between 1.5 and 4.0.

8. A semi-submersible offshore vessel (1) according to claim 7, wherein said factor is between 2.0 and 3.0.

9. A semi-submersible offshore vessel (1) according to claim 1, wherein the second transverse pontoon section (12) has a vertical mean cross-section area (B) which exceeds the corresponding vertical mean cross-section area (C) of each of the two longitudinal pontoon sections (14).

10. A semi-submersible offshore vessel (1) according to claim 1, wherein the support columns (20, 22) in the second column pair (26) each has a water-plane area (E) which exceeds the water-plane area (D) of each of the support columns (16, 18) in said first column pair (24) by a factor of between 1.3 and 2.5.

11. A semi-submersible offshore vessel (1) according to claim 10, wherein said factor is between 1.5 and 2.0.

12. A semi-submersible offshore vessel (1) according to claim 1, wherein the support columns (16, 18, 20, 22) are inclined upwardly and substantially radially inwardly from the ring-pontoon (6) to the upper deck-structure (28) towards a vertical centerline (42) of the vessel (1).

13. A semi-submersible offshore vessel (1) according to claim 1, wherein said edge portions (23) of the ring-pontoon (6) each has a horizontal mean cross-section area (F) which equals or exceeds the corresponding water-plane area (D, E) of the respective support columns (16, 18, 20, 22).

14. A semi-submersible offshore vessel (1) according to claim 13, wherein said edge portions (23) include narrowing transition cone elements (44) adapted to bridge differences in cross sectional areas between pontoon sections (10, 12, 14) and said edge portions (23).

15. A semi-submersible offshore vessel (1) according to claim 1, wherein said second transverse pontoon section (12) has a height which exceeds its width (W_2).

16. A semi-submersible offshore vessel (1) according to claim 1, wherein one or more steel catenary riser pipes (46) are attached to said second pontoon section (12).

17. A semi-submersible offshore vessel (1) according to claim 1, further comprising a derrick (52) for performing offshore drilling operations is positioned at said second end (4) of the vessel (1).

18. A semi-submersible offshore vessel (1) according to claim 1, wherein said first end (2) is a forward end of the vessel and said second end (4) is an aft end of the vessel.